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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,827	11/14/2000	Loi Nguyen	93-C-077C1	4608

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EXAMINER

PHAM, LONG

ART UNIT PAPER NUMBER

2823

DATE MAILED: 08/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/712,827

Applicant(s)

NGUYEN ET AL.

Examiner

Long Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 and 35-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 35-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1 and 49 have been considered but are moot in view of the new ground(s) of rejection.

***New grounds of rejection***

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chou ('415) in view of JP 5074958 (JP '958).

Chou teaches a fabrication method, comprising the steps of (1A-1C, and 1-12 and col. 1, line 10 to col. 4, line 60):

forming dielectric structure over a contact region, the dielectric structure comprising:

- a first layer 34 formed from a first material; and
- a second layer 38 overlying the first layer and formed from the first material;

forming and patterning a resist layer 40 over the dielectric structure; selectively etching the second layer through an opening through the patterned resist layer utilizing an etch (isotropic) which undercuts the patterned resist layer in an etched region formed by the relatively isotropic etch process; and

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without stripping the resist layer, etching the dielectric structure through the opening within the patterned resist layer and any etched region within the second layer to form a contact opening extending through the dielectric structure and exposing the contact region.

Chou teaches that the first or bottom and second or top layers are both made from oxide, but fails to teach that the first layer is made from silicon nitride as recited in present claim 1.

JP '958 teaches that a first or bottom layer 111 of dielectric layer structure is made of silicon nitride. See figures (a)-(c) and the English abstract.

It would have been obvious to ***one of ordinary skill in the art of making semiconductor devices*** to form the bottom or first layer of the dielectric structure from silicon nitride in Chou's method because silicon nitride can provide etching stopping during the etching of the top or second layer of the dielectric structure. See figures (a)-(c) and the English abstract.

4. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chou ('415) in view of JP 5074958 (JP '958).

Chou teaches a method of forming a contact opening, comprising: ( see 1A-1C, and 1-12 and col. 1, line 10 to col. 4, line 60):

forming dielectric structure over a contact region, the dielectric structure comprising:

a first layer 34 formed from a first material; and

a second layer 38 overlying the first layer and formed from the first material;

forming and patterning a resist layer 40 over the dielectric structure; selectively etching the second layer through an opening through the patterned resist layer utilizing an etch (isotropic); and

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without stripping the resist layer, etching the dielectric structure, utilizing a relatively anisotropic etch process, through the opening within the patterned resist layer and the etched region within the second layer to form a contact opening extending through the dielectric structure and exposing the contact region.

Chou teaches that the first or bottom and second or top layers are both made from oxide, but fails to teach that the first layer is made from silicon nitride as recited in present claim 49.

JP '958 teaches that a first or bottom layer 111 of dielectric layer structure is made of silicon nitride. See figures (a)-(c) and the English abstract.

It would have been obvious to *one of ordinary skill in the art of making semiconductor devices* to form the bottom or first layer of the dielectric structure from silicon nitride in Chou's method because silicon nitride can provide etching stopping during the etching of the top or second layer of the dielectric structure. See figures (a)-(c) and the English abstract.

#### ***Allowable Subject Matter***

5. Claims 35-41 and 50-53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

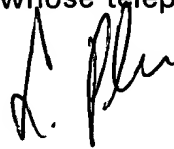
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 703-308-1092. The examiner can normally be reached on M-F, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is

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assigned are 703-746-4082 for regular communications and 703-746-4082 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Long Pham

Primary Examiner

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L. P.

July 29, 2002